



Australian Bureau of Statistics

CensusAtSchool Australia

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Resources



CaSMa13 - The Statistical Cycle Year 7

You can download this activity, the teacher solutions and the [assessment rubric](#) as a rich text file (RTF) at the bottom of the page. Download our printer friendly Prepared Samples as Excel files or access data using the Random Sampler.

Subject Area

Mathematics

Key Statistical Literacy Competencies Addressed

- Data awareness
- The ability to understand statistical concepts
- The ability to analyse, interpret and evaluate statistical information
- Communicating statistical information and understandings

Overview

In this investigation students use the 5 step statistical cycle to design an investigation and use statistical displays and summary statistics to analyse CensusAtSchool data. The activity is designed to encompass all of the year 7 Data representation and interpretation content.

Requirements

- Spreadsheet software program
- Pens and paper
- Worksheet

Instructions

STEP 1: The Problem

The first step when using the statistical cycle, is to decide on the topic of your investigation e.g. what is the 'problem' you will investigate?

In this case your data must be numerical and compare the results of at least two distinct groups. For example:

- | | |
|-------------|--|
| Sex: | Do boys have faster reaction times than girls?
Sexes (boys vs girls) are the distinct groups; reaction time is the numerical data. |
| Breakfast: | Do cereal eaters have better concentration than students who don't eat breakfast?
Breakfast types (cereal vs no breakfast) are the distinct groups; concentration time is the numerical data. |
| Year level: | Who has a longer foot length: your year level or another?
Year levels (yours vs another) are the distinct groups; foot length is the numerical data. |
- Choose the problem you want to investigate. Now, write your investigation in the form of a question, like the examples above.
 - Define the key terms of your investigation question e.g. 'height' means height measured in cm without shoes. Explain what you already know about your chosen problem, and what you want to find out.

STEP 2: The Plan

The second step in the cycle involves making the decisions about your data e.g. how big should your sample be? How will your sample be chosen? You also need to think about what you expect to find so that you are ready to talk about any unexpected results.

- What results do you expect to find? Write a sentence that predicts what you think the data will show you.
- Look at the CensusAtSchool questionnaire and write down which questions provide the data you need to complete your investigation.
- What sample size will you use? Explain your choice.

STEP 3: The Data

After defining your problem, and planning your investigation, the next step in the statistical investigation cycle is to organise the

data so it is easy for you to interpret and for others to read.

- f) How did you collect and organise the data?

HINT: The data comes as an Excel spread sheet. You can use the 'Sort' function in the data tab to order the data e.g. by year level, sex, height. This will make it easier to display the data.

- g) Did you use all the data or did you "clean it" to eliminate any obvious errors? Explain why you did/did not clean the data. If you did clean the data, how did you decide what data to 'clean'?
- h) What level of accuracy is appropriate for this investigation? E.g. For very spread out data you may decide to arrange it so as to contain it in 6 - 10 groups. You may decide to round off your answers? Explain your decisions.
- i) How did you display the data? Explain your choice.

STEP 4: The Analysis

Once you have sourced the data to answer your investigation 'problem', the next step in the statistical cycle is to analyse what the data tell you.

- j) Produce and clearly display your data using summary statistics.

HINT: Summary statistics are best displayed in a table. You will need to calculate the mean, median and range. You can do this in Excel by using the formulae "=average" and "=median" to calculate the mean and median. To calculate the mode use "=mode". You can choose to look at the mode or the modal range if your data are grouped.

STEP 5: The Conclusion

This is the final step of the statistical investigation cycle. At this stage of the cycle, you are using your summary statistics to sum up your findings about your investigation. This is also where you communicate your findings using appropriate statistical vocabulary.

- k) What is the answer to your original question? You will need to draw on your summary statistics from 'Step 4' to provide proof.
- l) What meaning can be taken from your results? Can your answers be generalised beyond your sample? How could your results be applied in real life? Where should they not be used, or, used with caution?

Student Worksheet

RTF

Teacher Solutions

RTF

Assessment Rubric

RTF

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